

*New Jersey's
Sediment Decontamination
Technology Demonstration Project*

*Phase I
Spending Plan*

*Presented to the
Joint Budget Oversight Committee*

*New Jersey Maritime Resources
New Jersey Department of Transportation*

March 29, 2000

NJ MARITIME RESOURCES
 Spending Plan – Phase I
 Sediment Decontamination Technology Demonstration Program

This program summary and the attached project summaries presents the spending plan of NJ Maritime Resources (NJMR) to enact the first phase of the Sediment Decontamination Technology Demonstration Program as required by the Port Revitalization, Dredging, Environmental Cleanup, Lake Restoration, and Delaware Bay Area Economic Development Act of 1996 (Dredging Bond Act). The following details the program financial requirements to date as recommended by the Dredging Project Facilitation Task Force and as appropriated in Chapter 207 and signed into law September 15, 1999.

The NY/NJ Joint Dredging Plan and the NJ Dredging Bond Act charge NJ Maritime Resources with the demonstration of commercially viable sediment decontamination technologies. For the purposes of this project, decontamination is defined as the destruction, removal, or fixation of contaminants in the sediment matrix.

In September of 1997, NJMR staff drafted an RFP to demonstrate decontamination technologies for harbor sediments. During this process, NJMR solicited comments from other state agencies, and regional stakeholders. The RFP was published by NJ Dept. of Treasury on March 4, 1998. Fifteen proposals were received (Table 1).

Table 1. Summary of Proposals Received During Open Solicitation, March, 1998

Bidder	Technology	Total Price
M.I.T.A Europa ³	Mineralization	4,350,000.00
Plasmarc, LLC	Thermal Desorption	4,615,000.00
Soil Technology, Inc.	Thermal Desorption, etc.	4,962,960.00
Applied Remediation Technologies, Inc.	Sediment Washing, etc.	5,760,700.00
NUI Environmental Group, Inc.	Sediment Washing	5,908,000.00
Environmental Directions, Inc. ³	Stabilization, Bioremediation	7,030,000.00
Innovatech ¹	Thermal/Chemical	7,330,000.00
JCI/Ucycle Associates, LLC	Thermal Desorption	7,808,000.00
Soil Safe, Inc. ^{2,3}	Stabilization	7,960,894.99
Waste Concepts, Inc. ^{1,2}	Stabilization	8,027,700.00
BEM Systems, Inc	Mineralization	8,104,248.00
O'Brien and Gere Technical Services	Sediment Washing, etc.	11,339,502.00
Neutralysis Industries Development Co. ^{2,3}	Stabilization, etc.	14,808,640.00
Institute of Gas Technology	Thermal Desorption	17,518,639.00
WEB Consortium (Biogenesis)	Sediment Washing	19,466,292.00

¹ Proposal received after due date time

² Non-responsive

³ Proposal incomplete

Due to the highly technical and experimental nature of many sediment decontamination technologies, a Technical Review Committee (TRC) was convened to provide assistance for technical review of the proposals. The TRC was an *ad hoc* organization of invited members of the regulatory, scientific, engineering and academic communities that have specific technical experience in management and/or remediation of contaminated sediments and soil, process engineering, proposal solicitation and review, or dredging. A report of the findings of this Committee was presented to the Dredging Project Facilitation Task Force (DPFTF) for consideration. The DPFTF was the appointed body responsible for review of all spending under the Dredging Bond Act. A copy of this report is available on request.

The DPFTF reviewed the findings of the TRC and conducted hearings to further evaluate the proposals. The findings of their review were made public during the December, 1998 meeting. The DPFTF accepted the report of the TRC, but for the sake of completeness, required that two additional proposals be added to the Program. A copy of this report is available on request. Pilot phase studies were to be completed and reviewed by the NJMR and NJDEP prior to considering demonstration level projects. Note that during the lag period between selection and today, the WEB Consortium (BGW, LLC) completed their pilot program. The NJDEP and NJMR approved the pilot program report and requested a Scope of Work for a demonstration level project. The technologies selected for the Program are listed in Table 2. The DPFTF drafted legislation to appropriate \$20 million for the Program and for NJMR to implement the Program. This legislation was signed into law September 15, 1999 (Chapter 207).

Table 2. Selected Vendors for the Sediment Decontamination Technology Demonstration Program.

Vendor	Technology	Beneficial Use Product
WEB Consortium (BGW, LLC)	Sediment Washing	Manufactured Topsoil
Institute of Gas Technology (ENDESCO Clean Harbors, LLC)	Rotary Kiln Thermal Destruction	Blended Cement
JCI/Upcycle Associates, LLC	Rotary Kiln Thermal Destruction	Lightweight Aggregate
BEM Systems, Inc.	Enhanced Mineralization	Manufactured Fill/Soil
NUI Environmental, Inc.	Sediment Washing	Manufactured Fill/Soil

In June of 1999, NJMR began contract negotiations with the selected vendors. A scope of work and budget detail was requested of each technology proponent. Due to the time lag between proposal submission and contract negotiations, all vendors were allowed to revise their original budgets. In addition, technical and permitting requirements often resulted in increased costs, which were considered during negotiations. The full budget for this initial phase of work is outlined in Table 3. A detail of each project follows. Actual contracts and work plans are available from NJMR.

At the completion of Phase I work, additional funding requests will be contingent on the results of the various pilot programs. Only those technologies deemed effective and economically viable by NJMR and the NJDEP will be considered for demonstration level funding.

Table 3. Spending Plan for Phase I of the Sediment Decontamination Technology Program.

Vendor	Pilot/Demo	Location of Project	Contract Amount
BGW, LLC	Demonstration	Kearny, NJ	\$6,524,945.00
ENDESCO Clean Harbors, LLC	Pilot	Linden, NJ	\$1,246,547.00
JCI/Upcycle Associates, LLC	Pilot	Newark, NJ	\$1,173,213.00
BEM Systems, Inc	Pilot	New Brunswick, NJ	\$592,378.00
NUI Environmental	Pilot	Elizabeth, NJ	\$322,300.00
		Total	\$9,859,383.00

Proposed

***New Jersey Maritime Resources
Programmatic Spending Plan for the
Port Revitalization Act of 1996***

Program

Sediment Decontamination Technology Demonstration

Project Name: Demonstration Project for Georemediation Technology

Location/Description

BEM Systems, Inc. has obtained an exclusive license to market Georemediation™, a sediment decontamination technology that purports to increase the natural volatilization and decomposition of organic pollutants and enhance the mineralization of trace elements. The resulting soil can be used for a variety of applications in construction and remediation. Bench scale studies using this technology have shown that it may be effective at reducing some types of contaminants, but it requires substantial development before it would be efficient enough to be cost-effective. This pilot study will provide funding to assist BEM in furthering the development of this technology and provide needed data on the potential environmental issues surrounding volatilization of sediment-bound pollutants. The Scope of Work for the pilot level project was reviewed and approved by NJMR and NJDEP. The scope calls for \$592,378.00 in funding.

County: Middlesex

Municipality: New Brunswick

Legislative District: 17

Sponsor: NJDOT

Administration: NJMR

Phase: Pilot, up to 500 gallons

Funding: Port Revitalization Act of 1996

Amount: \$592,378.00

Proposed

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Program

Sediment Decontamination Technology Demonstration

Project Name: Demonstration Project for BioGenesis Soil Washing Technology

Location/Description

The Biogenesis sediment washing technology, as proposed by BGW, LLC is one of the most promising decontamination technologies proposed in the Sediment Decontamination Technology Demonstration Program. BGW, LLC recently successfully completed a 800 cubic yard pilot project on Newark Bay sediments with funding from the USEPA. The pilot project report was reviewed by NJMR and NJDEP and determined to meet the requirements of a pilot evaluation under this Program. Consequently, BGW, LLC was asked to submit a scope of work for demonstrating the technology on a larger volume of material, consistent with the goals of the original RFP. A scope of work for a demonstration level project was reviewed and approved by NJMR and NJDEP. The scope calls for \$6,524,945.00 in funding to treat up to 75,000 cubic yards of contaminated dredged material from Newark Bay (Stratus Petroleum) and/or Upper New York Bay (Port Jersey Channel).

County: Hudson

Municipality: Kearny

Legislative District: 32

Sponsor: NJDOT

Administration: NJMR

Phase: Demonstration, up to 75,000 cubic yards

Funding: Port Revitalization Act of 1996

Amount: \$6,524,945.00

Proposed

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Program

Sediment Decontamination Technology Demonstration

Project Name: Demonstration Project for IGT ENDESCO Cement Lock Technology

Location/Description

The ENDESCO Clean Harbors, LLC proposes to treat 500 tons of pelletized dredged material from Newark Bay by melting the pellets in a gas-fired rotary kiln to be sited in Linden, NJ. The resulting "Eco-Melt" is crushed and mixed with activators to produce a construction quality blended cement product. Bench scale studies conducted by the USEPA show that the extremely high temperature kiln firing results in destruction of essentially all of the organic contaminants and the remaining trace elements are locked into the mineral matrix (not leachable). This pilot level test is essential to show that the technology is suitable for treating Harbor sediments and that the technology does not result in unacceptable levels of air pollution. The Scope of Work for the pilot level project was reviewed and approved by NJMR and NJDEP. The scope calls for \$1,246,547.00 in funding.

County: Union

Municipality: Linden

Legislative District: 20

Sponsor: NJDOT

Administration: NJMR

Phase: Pilot, up to 500 tons

Funding: Port Revitalization Act of 1996

Amount: \$1,246,547.00

Proposed

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Program

Sediment Decontamination Technology Demonstration

Project Name: Demonstration Project for JCI/Ucycle Lightweight Aggregate Technology

Location/Description

The JCI/Ucycle Associates, LLC proposes to dewater 2,500 cubic yards of dredged materials from Newark Bay using a dockside belt press. The resulting pelletized material would then be hauled to a rotary kiln in Cohoes, NY (Norlite Corporation) for use in the manufacture of lightweight aggregate. The mineral makeup of the silt from the NY/NJ Harbor is very similar to that of the shale that is usually used to manufacture lightweight aggregate. There is a substantial demand (800,000 tons/year) for lightweight aggregate in the greater metropolitan area where it is used as a substitute for rock in weight-sensitive structural engineering. The rotary kiln process is different from incineration due to its extremely high temperature (2500 degrees) and results in complete destruction of all organic contaminants. The USEPA is providing \$90,000 in funds to support air monitoring of the stack of the Norlite facility. A portion of the dried pellets from the dewatering would be used in the ENDESCO Clean Harbors pilot project, as that technology is more efficient when conducted with dried material. The Scope of Work for the pilot level project was reviewed and approved by NJMR and NJDEP. The scope calls for \$1,173,213.00 in funding.

County: Essex

Municipality: Newark

Legislative District: 20

Sponsor: NJDOT

Administration: NJMR

Phase: Pilot, up to 2500 cubic yards

Funding: Port Revitalization Act of 1996

Amount: \$1,173,213.00

Proposed

***New Jersey Maritime Resources
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Program

Sediment Decontamination Technology Demonstration

Project Name: Demonstration Project for Big Blue Sediment Washing Technology

Location/Description

The Big Blue sediment washing technology, proposed by NUI Environmental of Elizabeth, NJ has been shown to be effective to decontaminate sandy sediments, but has not yet been evaluated for its ability to decontaminate the silty-clay sediments of the NJ Harbor. NUI Environmental proposes to treat 200 gallons of material from Newark Bay and to process this material through a system constructed on their Erie Street, Elizabeth site. This pilot level test will illustrate the process efficiency for dredged materials from the NJ Harbor and will verify that the chemically intensive treatment will be cost effective for navigational dredging projects. The resulting soil is envisioned to be useful in construction and remediation projects. The Scope of Work for the pilot level project was reviewed and approved by NJMR and NJDEP. The scope calls for \$322,300.00 in funding.

County: Essex

Municipality: Elizabeth

Legislative District: 20

Sponsor: NJDOT

Administration: NJMR

Phase: Pilot, up to 200 gallons

Funding: Port Revitalization Act of 1996

Amount: \$322,300.00